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The European Colloquium on Theoretical and Quantitative Geography (ECTQG)

7-11 September 2017

York, UK

LEEDS *Institute for
Data Analytics*


UNIVERSITY OF LEEDS

 **Consumer
Data
Research
Centre**

An ESRC Data
Investment

Welcome to the 2017 European Colloquium on Theoretical and Quantitative Geography (2017), organised by the School of Geography and the Leeds Institute for Data Analytics (University of Leeds).

It is a great delight to welcome you to York; a city that was established 2,000 years ago, and has been a substantial human settlement for considerably longer. For those of you with an appetite for history, the Roman Walls, Minster, Railway Museum, and Shambles may be among many sites of interest. For those of a more gregarious persuasion, then the many bars and restaurants of the city and riverside may be more appealing!

The School of Geography at the University of Leeds is somewhat less ancient than the city of York. Nevertheless, we have a long tradition as a centre for research in spatial analysis and quantitative methods, and after many years of participation in the ECQTG we are proud to host you in Yorkshire for the first time. We hope you will find stimulation as ever in the presentations and conversation with acquaintances old and new.

It is a special pleasure to welcome our old friend and mentor Professor Sir Alan Wilson as a keynote speaker. In half a century since the landmark publications of the 1960s, Alan's influence on the discipline has been peerless. We hope that you will especially enjoy the sessions that have been set aside for the appreciation of Alan's work, and will join in lively discussions about its continuing impact and legacy for the future.

Welcoming you to the conference at this time is also particularly exciting for the organising committee because we have recently been awarded substantial funding to create the Consumer Data Research Centre (CRDC) and, to support this initiative, the University of Leeds has also invested heavily in the new Leeds Institute for Data Analytics (LIDA). These programmes aim to bring together diverse groups of academics, businesses, and policy makers to work on critical geographical social issues. As such, the ECTQG is one of the most relevant and important fora for our work.

Best wishes,

Mark Birkin, Michelle Morris, Nick Malleson

(ECTQG Local organising committee)

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usual digital maps, MFA is conceived for the analysis of metropolitan-wide areas. The goal is to identify urban fabric types and morphological regions and produce a new analysis of the organization of the contemporary metropolis, based on the observable forms of the physical city.

The case study of the French Riviera shows how traditional urban fabrics are complemented by new suburban and connective fabrics, confirming the results of more qualitative studies. Above all, the analysis highlights the complexity of the emerging spatial organization of the metropolitan area. A first source of complexity allowed by the Bayesian probabilistic approach of MFA is the differentiation between core and peripheral areas for each urban fabric type: archetypical cores coexist with zones of overlapping characteristics, both in variable space and in geographic space. A second source of complexity is the juxtaposition of morphological regions of relatively homogeneous urban landscapes with others characterized by a fine mixture of different urban fabrics. A third source of complexity is the modular organization of the polycentric metropolitan area, coupled with trans-scalar self-similarity in the spatial arrangements of morphological regions. These results contribute to renewing the well-established frameworks of traditional urban morphology.

MFA is clearly susceptible of further improvements in the description of observable urban forms. Directions of methodological development will thus be highlighted. From an urban geographical perspective, comparative analysis of metropolitan areas and historical analysis of morphological processes within a given metropolitan area seem two important directions of further research. MFA also has the potential of contributing to the cross-analysis of urban form with socioeconomic phenomena linked to the human perception of physical forms.

4. *Brano Glumac; Marcos Herrera Gomez; Julien Licheron*

A residential land price index for Luxembourg: Dealing with the spatial dimension

This article introduces a residential (and mixed-use) land price index, based on original data allowing to merge transaction prices of land plots reported by notary deeds along with cadastral data and geo-spatial characteristics for all transaction recorded in Luxembourg from 2010 onwards. This database makes it possible to identify and locate all sales of available (i.e. non-constructed) land plots located in areas made for residential purpose (as indicated within the urban planning documents).

Luxembourg has been characterized for years by steadily increasing housing prices, stemming from an increasing gap between housing needs (steered by the economic and demographic growth) and new construction. The scarcity of available land and, probably more importantly, the difficulties for mobilizing the available land suggest that a specific index for assessing the evolution of constructible land is crucial for the design of urban planning, housing and tax policies.

After performing spatial dependence tests, an index based on a spatial hedonic model is constructed in order to cope with several identified spatial effects. The proposed index is a hedonic double imputed Fisher index, relying on a spatial Durbin error model. This hedonic model includes a rather large range of explanatory variables covering the physical characteristics of land plots, accessibility to employment and transportation, proximity to amenities, as well as environmental, legal and economic factors.

The proposed index is compared to results reached using alternative methodologies, with regards both to the type of hedonic modelling and/or the construction of the index. Finally, several robustness checks are conducted in order to assess the performance of the underlying hedonic model and the associated index regarding: i) quality of in-sample and out-of-sample prediction from the underlying hedonic model; ii) model coefficient stability over time; and iii) sensitivity to the procedure for detecting and eliminating outliers.

5. *Dani Broitman; Eric Koomen*

Living in historic cities: Intensification and increasing density gradients

Urban economic models predict that as transport costs decrease and population grows monocentric cities are expected to spread around their territory and their density profiles will flatten gradually. This prediction is empirically supported by a plethora of studies about urban densities development form all over the world. There are examples of exceptions to this rule, but they come from countries with extremely strict urban regulations or historic-political reasons. In this paper we analyze the urban density development of Dutch cities during 2000 and 2012. The urban density trends observed in the country are in contradiction with the observations in several parts of the world: Most urban areas in the Netherlands are experiencing an increasing residential density, and, to a lesser extent, increasing population density. In order to evaluate the strength and the relevance of these increasing urban density trends we first assess the monocentricity of the main Dutch cities. Restricting the urban areas to a circular ring with a radius of 5 km we demonstrated that regarding residential and population gradients, the majority of the cities can be classified as monocentric using data from 2012. As a second step, we performed the same monocentric assessment with data from 2000 and compare the results with 2012. For the majority of the Dutch cities, both residential and population densities gradients are becoming steeper over time, contrary to the worldwide urban density flattening experience. In the few cases where this phenomena is not observed this can be attributed to governmental planning decisions, whether regarding large-scale developments or by the foundations of new towns in previous decades. Therefore, as a general conclusion we can claim that Dutch cities centers are denser as a whole and their density gradient has increased in 2012, compared with their structure at 2000. Although it is at odds with most of the urban growth literature, this finding is in line with some recent urban sociological research. The existence of historical monuments and cultural heritage sites is positively related to increasing densities. This relation is observed for the Dutch urban structure as a whole and, for individual cities, and is significant for the largest ones.

6B - Accessibility

1. *Cyrille Medard de Chardon*

Detecting optimal cut-through locations to increase pedestrian and cycling modal shares

Western society's transportation design of prioritizing the private car, over other modes, has created complex health, environmental and safety challenges (Cox, 2010). Sprawling cul-de-sac development patterns, especially in the UK and USA, since the 1970's have led to less-safe, less valued and lower density cities (Marshall and Garrick, 2010). The resulting road networks decrease proximity to services and entrench dependence on personal motorized transport. Lower densities and greater distances to possible destinations undermine alternative modes, such as bus, rail, walking and cycling. Such urban structures create vulnerability and social isolation for the young and old who have less access to private vehicles (Martin, 2007). Socially, this existing urban transportation land use is exclusive, benefiting the wealthier (Martens, 2006; Mercier, 2009).

The reorienting of urban transport can have health, social, justice, security and quality-of-life benefits while being preventive and increasing resilience to environmental and economic instability (Cox, 2010). While a long-term approaches can change development patterns, solutions are required to retrofit vulnerable urban designs.

Accessibility is based on mobility, the ability to access adequate transport, and the proximity of destinations (Cervero, 2005). Where either is lacking, such as proximity in conventional suburban cul-de-sac developments, alternative transport is weakened. This paper presents a methodology determining optimal locations of cut-throughs, pedestrian and cycling paths which exclude motorized vehicles, to shorten distances to services, such as shops and schools, in order to increase accessibility.

This presentation will cover the methodology, results and context for application in safe routes to schools and other services. The methodology has three steps. The measuring of euclidean and network distances